



**JOHN F. KENNEDY  
SPACE CENTER**

**KHB 1870.1/IS**

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**ENVIRONMENTAL SANITATION HANDBOOK**

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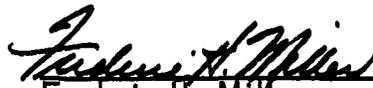
## PREFACE

The *Environmental Sanitation Handbook* provides guidance in the implementation of the basic provisions of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs" as the KMI pertains to environmental sanitation. It presents methods and procedures useful for the control of those sanitation factors which could create discomfort and illness in man or do harm to his environment.

The provisions of this handbook are applicable to all organizational elements of the Kennedy Space Center (KSC), NASA, and to its associated contractors located at KSC in accordance with the terms of their respective contracts.

Each section in this handbook is a complete entity and covers a separate item of interest in the Environmental Sanitation field.

For convenience, each section also includes a list of references applicable to that section.

  
Frederic H. Miller  
Director of Installation Support

Distribution:  
STDL-P

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## REFERENCES

NPD 1800.1, "NASA Occupational Medicine and Environmental Health Programs"

NPD 8800.6A, "Policy on Environmental Quality and Control"

NMI 1052.91A, "NASA-Bureau of Sport Fisheries and Wildlife Agreement-Use of Property at KSC"

NMI 8800.3A, "Prevention, Control and Abatement of Water Pollution"

NMI 8800.4, "Prevention, Control and Abatement of Air Pollution"

KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"

KMI 8800.3, "KSC Prevention, Control, and Abatement of Air and Water Pollution"

KHB 1840.1/IS, "Industrial Hygiene Handbook"

KHB 1860.1/IS, "Radiation Protection Handbook"

KSC GP-993, "Performance Specifications for Operation and Maintenance of Waste Water Treatment Plants"

SP 3410.1/AD, Systems Training Course Catalog, OP-305-KSC, "Respirators, Selection, Use and Care"

SP 3410.1/AD, "Systems Training Course Catalog", OP-309-KSC, "Food Service Sanitation Practices"

Executive Order 11612, "Occupational Safety and Health Programs for Federal Employees"

Code of Federal Regulations, Title 29, "Labor", Paragraph 1910.141

U.S. Department of Health, Education, and Welfare, Public Health Service Publication No. 546, "The Vending of Food and Beverages"

U.S. Department of Health, Education, and Welfare, Public Health Service Publication No. 934, "Food Service Sanitation Manual"

National Sanitation Foundation, Standard No. 3

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## SECTION I GENERAL DESCRIPTION

### 1.1 PURPOSE AND SCOPE

This handbook contains administrative direction and guidance on organizational and procedural requirements of the Environmental Sanitation portion of the Kennedy Space Center (KSC) Environmental Health Program. The program as identified in KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs," consists of three elements:

- Industrial Hygiene
- Radiological Health
- Environmental Sanitation

Additional Environmental Sanitation elements not included in this handbook will be developed and included herein at a later date.

Radiological Health guidance and procedural requirements are provided in KHB 1860.1/IS, "Radiation Protection Handbook."

Industrial Hygiene guidance and procedural requirements are provided in KHB 1840.1/IS, "Industrial Hygiene Handbook."

### 1.2 POLICY

KSC policy, as expressed in KMI 1810.1C/IS, is to provide an Environmental Health Program consistent with NASA directives and the goals and objectives of Executive Order 11612, which calls for an effective and comprehensive environmental health program at all Federal installations.

### 1.3 AUTHORITY

Specific policy and instructions identified with the individual sections of this handbook are consistent with established policies set forth in NPD 1800.1, "NASA Occupational Medicine and Environmental Health Programs"; KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"; and Executive Order 11612.

### 1.4 APPLICABILITY

The provisions of this handbook apply to all NASA organizational elements at the Kennedy Space Center (KSC) and to their supporting contractors in accordance with the provisions of their respective contracts.

## 1.5 ORGANIZATIONAL FUNCTIONS

- a. The KSC Environmental Health Officer (a member of the Medical Services Office, Installation Support Directorate) is responsible for administering the KSC Environmental Health Program (as prescribed in KMI 1810.1C/IS) to ensure that adequate guidance and assistance, recognition, monitoring, and control of physical, chemical, and biological hazards in the work environment are provided.
- b. The Occupational Medicine and Environmental Health Services (OMEHS) Contractor performs environmental health engineering services for the identification, evaluation, and control of health hazards. He provides the following specific environmental sanitation elements:
  - (1) Special and routine surveys for the study and evaluation of atmospheric, water, and soil pollution.
  - (2) Surveillance of, and bacteriological and chemical analysis of, potable water supplies to assure substantial compliance with National Aeronautics and Space Administration (NASA), State, and Federal standards.
  - (3) Special and routine surveys and studies of spacecraft environmental systems for conformance to established standards and specifications. Technical assistance to spacecraft and flight crew operations in resolving unique problems involving high purity water, sterilization of items of flight gear, environmental microbiology, cabin atmospheres, etc.
  - (4) Surveillance of, and examination of, sewage effluent and industrial waste disposal operations, with evaluation of effectiveness and disposal methods and water pollution control.
  - (5) Surveillance of solid waste and refuse disposal and refuse disposal problems to assure conformance with accepted sanitation requirements.
  - (6) Evaluation of the safe use of pesticides and their effectiveness in vector control.
  - (7) Surveillance of, and continuing inspection of, all areas where food is prepared, consumed, or vended, including machines, to provide an effective food sanitation program based upon accepted public health principles and State and Federal standards.

## SECTION II FOOD SERVICE SANITATION

### 2.1 PURPOSE AND SCOPE

- a. This section implements that portion of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs, "as it pertains to food service sanitation.
- b. The purpose of this section is to assure that all food served or vended at KSC will be clean, wholesome, and free of pathogenic organisms as well as organic or inorganic toxins (including those of bacterial origin).
  - (1) It locates the primary areas of food service sanitation concern at KSC.
  - (2) It outlines the basic principles and standards of food service sanitation to be followed by those who handle, inspect, procure, prepare, serve, and vend foods to be consumed at KSC.
  - (3) It presents an overview of methods and procedures useful in the prevention of food-borne diseases.
  - (4) It introduces food handlers training course OP-309-KSC, "Food Service Sanitation Practices."

### 2.2 GENERAL

- a. Most of the hot food served at KSC is centrally prepared in a main cafeteria and distributed by suitable vans to three other cafeterias located in the Operations and Checkout (O&C) Building, KSC Headquarters Building, and the Launch Control Center (LCC). Each of the four cafeterias serves "short orders" prepared on site.
- b. Mobile snack bars serving sandwiches, soup, coffee, milk, and other ready-to-eat items, are routed throughout the various work areas at KSC. These mobile snack bars are also stocked at the main cafeteria.
- c. The concessionaire operating the cafeterias and the mobile snack bars also operates two permanently fixed snack bars; one is located in the CIF Building and the other is located in the cafeteria in the Headquarters Building.

- d. The Florida Bureau of the Blind operates four concession stands at KSC. Two are located in the O&C Building, in the VAB, and one in the Headquarters Building. These stands sell packaged food items such as crackers, candy, gum, and drinks. Sandwiches can be heated in microwave ovens.
- e. The Visitors Information Center (VIC) contains a snack bar operated by the concessionaire conducting tours of KSC. Sandwiches, drinks and other pre-packaged food items are sold over the counter to the public.
- f. In addition to the above, vending machines to dispense sandwiches, soup, milk, candy, etc., are installed in many work areas at KSC. These vending machines are the property of the concessionaire operating the cafeterias. Microwave ovens to heat pre-packaged food items are installed in some work areas.

### 2.3 ORGANIZATIONAL FUNCTIONS

- a. The KSC Environmental Health Officer (IS-MED-A) assures that the OMEHS Contractor:
  - (1) Maintains a continuing program of inspection and surveillance in all areas where food is stored, prepared, served, vended, and consumed. Such inspections are made under the guidelines established by Chapters 10D-13, 10D-14 and 10D-15, Rules, State of Florida, Department of Health and Rehabilitative Services. Findings are recorded on KSC Form 16-256 entitled "Environmental Health Food Service Sanitation Checklist" (Figure 2-1) and transmitted in completed form to the manager of the facility inspected for appropriate action.
  - (2) Samples and analyzes food and beverage items as often as necessary to determine that the items are wholesome, unadulterated, correctly labeled, and completely safe for human consumption. When feasible, the Environmental Health Laboratory facilities will be utilized for analysis of samples, but milk and other dairy products will be delivered to the Brevard County Health Department for bacteria count and analysis. Florida State Board of Health Department Form HB-102 is utilized when transmitting dairy products (see Figure 2-2).
  - (3) Makes recommendations (to IS-MED-A) for corrective action, based on findings, to assure that an effective food service sanitation program is maintained at KSC in compliance with accepted public health principles as well as all applicable Federal and State Regulations for the protection of the public health.

**ENVIRONMENTAL HEALTH  
FOOD SERVICE SANITATION CHECKLIST**

NAME OF FACILITY INSPECTED		DATE		TIME	
ITEM INSPECTED	S	U	ITEM INSPECTED	S	U
<b>1. FOOD SERVICES WORKERS</b>			<b>4. SERVING TECHNIQUE</b>		
A. HEALTH CERTIFICATE			A. SERVING LINE		
B. PERSONAL HYGIENE			B. SANDWICHES		
<b>2. FACILITIES AND EQUIPMENT</b>			C. FROZEN FOOD		
A. VENTILATION			D. LEFT-OVER FOOD		
B. FLOOR			<b>5. DISHWASHING TECHNIQUE</b>		
C. INSECT AND RODENT CONTROL			A. PRE-WASH		
D. UTENSIL STORAGE			B. WASH (TEMP.)		
E. MOP AND BROOM RACK			C. RINSE (TEMP.)		
F. RESTROOMS			D. STORAGE OF CLEAN EQUIPMENT		
G. OUTSIDE AREA			<b>6. FOOD PREPARATION</b>		
H. GARBAGE DISPOSAL			A. EQUIPMENT		
<b>3. STORAGE TECHNIQUES</b>			B. FOOD HANDLING		
A. REFRIGERATORS			C. FOOD TEMPERATURES		
B. DRY STORAGE					
C. VEGETABLES					
D. BREAD AND BAKERY PRODUCTS					
E. FOOD HANDLING					
REMARKS AND RECOMMENDATIONS. WRITTEN REPLY IS REQUIRED WITHIN 10 DAYS.					
<b>GENERAL RATING</b>		SIGNATURE OF SANITARIAN		SIGNATURE OF FOOD SERVICE SUPERVISOR	
SATISFACTORY					
UNSATISFACTORY					

KSC FORM 16-258 (5/71)

\*S - SATISFACTORY      U - UNSATISFACTORY

Figure 2-1. Environmental Health Food Service Sanitation Checklist

FLORIDA STATE BOARD OF HEALTH  
BREVARD COUNTY HEALTH DEPARTMENT

MILK SAMPLES

Date: \_\_\_\_\_

Time: \_\_\_\_\_

(Circle one)

FOOD SERVICE    FOOD OUTLET    FARM    TRUCK    PLANT    RECEIVING PLANT    SCHOOL

Name of establishment  
or truck number

Dairy

Location

Milk collection temperature \_\_\_\_\_ °F    Laboratory milk receiving temp. \_\_\_\_\_ °F

Truck temperature \_\_\_\_\_ °F    time \_\_\_\_\_

date \_\_\_\_\_

SAMPLES

Container

Product

Code

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_

Signature \_\_\_\_\_  
Employee, Manager, Driver

Signature \_\_\_\_\_  
Collector

Signature \_\_\_\_\_  
Laboratory Agent

Figure 2-2. Milk and Dairy Products Sample Analysis Form.

- (4) Reviews plans for new or altered food service facilities, including mobile snack bars, to improve, where feasible, the sanitation features of design and equipment.
- (5) Reviews vending services to assure that specified vending machines meet or exceed the standards established in Public Health Service Publication No. 546, "The Vending of Foods and Beverages." These standards have been incorporated into the Florida State Code cited above, "Food Service", as well as the Code of Federal Regulation, Title 29, "Labor", paragraph 1910.141.
- (6) Investigates and makes reports, as required, to proper authorities following outbreaks of food-borne diseases at KSC.
- (7) Cooperates fully with local, State, and Federal authorities on all aspects of food sanitation.

Organizations storing, preparing, and serving food will:

- (1) Assure that all areas under their control meet or exceed the minimum acceptable requirements established by pertinent directives, including this handbook, as well as Federal and State regulations for the safe handling of food.
- (2) Visually examine all food handlers, at least once daily, to assure conformance with established hygienic practices in the handling of food, to include:
  - (a) A daily bath,
  - (b) Clean outer clothing,
  - (c) Clean, short fingernails,
  - (d) Use of hair nets or lacquer spray when hair is longer than 6 inches (this applies to both male and female employees),
  - (e) Removal of wrist watches and rings, except plain wedding bands, during the preparation and serving of food,
  - (f) Washing hands with warm water and soap upon reporting for duty, following each visit to a restroom, and after handling raw meat, fish, or fowl (these are minimum requirements),
  - (g) Reporting symptoms of infectious diseases, including colds, to medical authorities.

- (3) Require completion of training course OP-309-KSC, "Food Service Sanitation Practices," or equivalent, as a prerequisite to food handling.
  - (4) Comply with the physical examination requirements established for those persons handling food as outlined in "Rules", State of Florida, Department of Health and Rehabilitative Services, Chapters 10D-13, 10D-14, and 10D-15.
- c. Organizations operating vending machines that dispense food or beverages will:
- (1) Certify that vending machines meet the requirements established in paragraph 2.3a(5).
  - (2) Locate vending machines in such a manner as to prevent any contamination of the food to be dispensed.
  - (3) Assure that sandwiches dispensed by machine are coded with the date of preparation and removed from the machine no later than 72 hours after preparation.
  - (4) Assure that dairy products, other than ice cream, are coded with the date of expiration. Milk products will be less than two days old when placed in the vending machine and will be removed when five days old.
  - (5) Establish and maintain a vending machine cleaning schedule and method of cleaning acceptable to the KSC Environmental Health Officer.
  - (6) Comply with the requirements of U.S. Public Health Service Publication No. 546, 1965, and Rules, State of Florida, Department of Health and Rehabilitative Services, Division of Health, Chapter 10D-13, "Food Service."
- d. The Chief, Medical Services Office (IS-MED) assures that the OMEHS Contractor:
- (1) Provides technical assistance pertaining to the medical aspects of food service sanitation.
  - (2) Establishes health standards for, and provides initial and periodic medical examinations of, food handlers.

- (3) Evaluates the preventive medicine program as it pertains to food service sanitation and food-borne disease epidemiology.
- (4) Investigates and makes reports, as required, to proper authority following a food-poisoning or food-infection outbreak at KSC.
- (5) Cooperates with Federal, State and local authorities on the medical aspects of food sanitation.

## 2.4 FOOD-BORNE DISEASE PREVENTION METHODS

### a. Prevention by Examination of Food Handlers

- (1) All food handlers will have successfully passed a medical examination before performing any duties involving food handling. The Chief, Medical Services Office will determine the necessity, frequency, and extent of subsequent examinations.
- (2) All food handlers will report to the OMEHS Medical Facility when any symptoms of a communicable disease are present, including, but not limited to:
  - (a) Skin infections
  - (b) Fever
  - (c) Colds
  - (d) Cough
  - (e) Sore Throat
  - (f) Weight loss
  - (g) Diarrhea

In addition, illnesses of similar nature occurring in the home of the food handler are significant and should be reported for a medical determination of the likelihood of transmission to third parties.

- (3) Examination by supervisors will be accomplished daily as outlined in paragraph 2.3b(2).

### b. Prevention by Proper Design Features

- (1) Plans and specifications for new construction or modification of existing facilities involved in food service will be submitted to the KSC Environmental Health Officer for approval of design features prior to construction or modification.

- (2) Desirable design features include those connected with approved sanitary practices in general and specifically with those affording ease of cleaning. The principles of design outlined in Rules, State of Florida, Chapters 10D-13, 10D-14, and 10D-15, Food Services Sanitation Manual Public Health Service Publication No. 034 will be followed, where feasible.

c. Prevention by Food Inspection

- (1) Foods to be served or vended at KSC will originate from approved sources. Continued surveillance of the processing establishments and foods derived therefrom will be performed by the KSC Environmental Health Officer.
- (2) Samples of milk and dairy products, as well as other food items, will be cultured and checked for pathogenic organisms on a regular basis to assure a continuance of good food sanitation practices in all areas.
- (3) In addition, the KSC Environmental Health Officer will assure compliance with the requirements of paragraph 2.3a(1).

d. Prevention by Food Storage Techniques

- (1) All food storage areas will be clean, sanitary, and free of insects and rodents.
- (2) Refrigerators and cold storage facilities must have an operational and visible thermometer installed.
- (3) All foods stored in refrigerators or cold storage facilities will be maintained at the temperature outlined in Chapters 10D-13, 10D-14, and 10D-15, Rules, State of Florida, Department of Health and Rehabilitative Services.
- (4) Frozen foods, once thawed, will not be refrozen.
- (5) Foods left over from serving lines will not be frozen. They may be labeled, dated, and refrigerated, but they must be used within 24 hours. Exceptions exist for certain items (such as mustard, ketchup, bread, cheese, etc.) which are poor growth media for bacteria.

e. Prevention by Dishwashing Techniques

- (1) Used dishes will be prewashed in warm water with a detergent approved by the KSC Environmental Health Officer.
- (2) Wash time, water temperature, pressure, and quantity will be as prescribed by the National Sanitation Foundation Standard No. 3 (see Table 2-1).
- (3) Final rinse water will be applied at temperature of at least 180F.
- (4) Clean dishes, glasses, trays, and other utensils will be stored in such a manner as to prevent contamination from dust, dirt, insects, and handling.
- (5) Ice cream freezers and bulk milk dispensers shall be cleaned as directed by Chapter 10D-13, Rules, State of Florida, Department of Health and Rehabilitative Services and Food Service Sanitation Manual, Section D.

f. Prevention by Good Housekeeping Procedures

- (1) Wall, ceilings, windows, ducts, fan blades, and screens will be kept clean and free from dirt, dust, and grease.
- (2) Floors will be cleaned by washing or mopping. Dry sweeping is prohibited.
- (3) Steam tables, coffee urns, water fountains, griddles, condiment tables, etc., will be cleaned at least once daily.
- (4) Kitchen tables, meat grinders, knives, etc., will be cleaned and sanitized after each use.
- (5) Cooking surfaces of grills, griddles, and similar cooking devices shall be cleaned at least once a day, and shall be free of incrustated grease deposits and other soils.
- (6) All other surfaces of equipment used in the food service operation, including tables, counters, shelves, mixers, grinders, slicers, hoods, and fans, shall be cleaned as often as necessary to prevent accumulations of dust, dirt, food particles, and other debris.
- (7) Garbage will be disposed of in a sanitary manner, and cans containing food waste will be securely covered to prevent access by insects and rodents.

Table 2-1. Wash and Rinse Specifications for Spray Type Dishwashing Machines  
(Recommended by National Sanitation Foundation)

	Single-Tank Stationary Rack: Hood & Door Types	Single-Tank Conveyor-Type	Multiple-Tank, Conveyor-Type (Preflushed)
<u>Wash Cycle</u>			
Water temperature	150°F	160°F	150°F
Volume of water	Multiply area of rack by 0.23 to give gallons/rack	Multiply width of conveyer by 0.15 to give gallons/lineal inch	Multiply width of the conveyer by 0.0825 to give gallons per lineal inch
Time of wash	40 seconds	15 seconds	7 seconds
<u>Rinse Cycle</u>			
Time	10 seconds	Conveyer speed maximum of 7 feet/minute	POWER RINSE 7 seconds FINAL RINSE Conveyer speed maximum 15 feet/minute
Volume of water	0.43 gallons/100 sq. inches	1.735 gallons/minute/100 sq. inches	0.0825 to give gallons per lineal inch to give gallons/minute
Temperature of water at manifold pressure	180° to 195°F 20 psi (15 to 25 psi)	180° to 195°F 20 psi (15 to 25 psi)	180° to 195°F 20 psi (15 to 25 psi)

- (8) Animals are not permitted in food services facilities.
- (9) Smoking is not permitted in a food-handling area.
- g. Prevention by Health Education
  - (1) All food service personnel will be given instruction in the principles and practices of food service sanitation prior to employment.
  - (2) Refresher training in food service sanitation will be presented by the OMEHS Contractor as determined by the KSC Environmental Health Officer.

## 2.5 REFERENCES

- a. KMI 1910.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"
- b. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-13, "Food Service"
- c. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-14, "Food Processing"
- d. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-15, "Food Outlets"
- e. KSC Form 16-256, "Environmental Health Food Service Sanitation Checklist"
- f. Florida State Board of Health Department, Form HD-102
- g. Public Health Service Publication No. 546, "The Vending of Food and Beverages"
- h. Code of Federal Regulations, Title 29, "Labor", paragraph 1910.141
- i. SP 3410.1/AD, "Systems Training Course Catalog", OP-309 KSC, "Food Service Sanitation Practices"
- j. Public Health Service Publication No. 934, "Food Service Sanitation Manual"
- k. National Sanitation Foundation, Standard No. 3

## SECTION III SURVEILLANCE OF POTABLE WATER

### 3.1 PURPOSE AND SCOPE

- a. This section implements that portion of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs," as it pertains to the surveillance of KSC potable water supplies.
- b. The purpose of this section is to assure that all KSC potable water supplies are in substantial compliance with NASA, State, and Federal standards.
- c. The contents of this section are limited to:
  - (1) A general description of the source, treatment, and delivery of potable water used at KSC.
  - (2) An outline of specific Environmental Health functions in sampling, testing, and analyzing potable water.

### 3.2 GENERAL

- a. The Cocoa Municipal Water Authority supplies most of the potable water consumed at KSC. This water originates from deep wells located in eastern Orange County and is filtered, chlorinated, and fluoridated prior to release. Treatment and final quality of the water is in compliance with Chapter 10D-14, Rules, State of Florida, Department of Health and Rehabilitative Services, "Water Supplies." Prior to entry into the KSC water system (on State Road 3), Cocoa water is re-chlorinated at the entrance to KSC by a NASA-owned and operated chlorinator. In some areas remote from the KSC entry point, water is again re-chlorinated prior to reaching its final destination. All chlorination stations are operated by Mechanical Utilities personnel. Environmental Health personnel sample potable water at KSC from 26 sites at least once each month. Samples are submitted to the Environmental Health Laboratory for analysis (see Figure 3-1, "Request for Analytical Service"). A complete water chemistry analysis is conducted twice annually by Environmental Health personnel on all potable water at KSC, to include the KARS Recreation Area.
- b. Bottled water is available for use at sites on KSC not supplied with piped in water. As a general rule, bottled water will be found in temporary work sites and remote guard shacks. All bottled water at KSC is furnished under contract, awarded from year to year, and generally in conjunction with a similar contract at CKAFS. With one exception, standards for bottled water are essentially those outlined in Chapter 10D-19, State of Florida, Department of Health

ENVIRONMENTAL HEALTH LABORATORY REQUEST FOR ANALYTICAL SERVICE			
ORIGINATOR:		DATE SUBMITTED:	
ADDRESS:	TELEPHONE:	PROJECT NO.:	<input type="checkbox"/> EMERGENCY <input type="checkbox"/> ROUTINE
DESCRIPTION OF SAMPLE:			
INFORMATION REQUESTED:			
<b>DO NOT WRITE BELOW THIS LINE - FOR ENVIRONMENTAL HEALTH LABORATORY USE ONLY</b>			
RECEIVED BY:	RESULTS DUE:	EHL LOG NO.:	
ANALYTICAL RESULTS:			
REPORTED TO:	DATE COMPLETED:	ANALYST: APPROVED:	

KSC FORM 26-482 (4/71)

Figure 3-1. Request for Analytical Service

and Rehabilitative Services, "Bottled Drinking Water." The one exception is that bottled water delivered to KSC must have a chlorine residual, detectable upon analysis. Environmental Health personnel take random samples from each delivery for chemical and bacterial analysis.

- c. Spacecraft water is basically Cocoa municipal water that has been ultra filtered, deionized, and specially purified prior to placement aboard the spacecraft. Specifications for spacecraft water vary with the mission and projected use of the water. Environmental Health personnel sample spacecraft water for bacterial and chemical analysis in the Environmental Health Laboratory.

### 3.3 ORGANIZATIONAL FUNCTIONS

The KSC Environmental Health Officer (IS-MED-A) assures that the OMEHS Contractor.

- a. Maintains a continuing surveillance over all potable water operations at KSC.
- b. Routinely samples and performs bacteriological and chemical analysis of all potable supplies to assure compliance with Federal, NASA, State, and local standards for potable water.
- c. Furnishes technical and laboratory assistance to spacecraft operations in the resolution of problems involving spacecraft water. Analyzes spacecraft water; sterilizes associated equipment.
- d. Investigates complaints regarding water quality. Makes recommendations for corrective action as needed.
- e. Cooperates with Federal, NASA, State, and local authorities in the maintenance of water quality.

### 3.4 REFERENCES

- a. KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"
- b. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-4, "Water Supplies"
- c. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-19, "Bottled Drinking Water"

## SECTION IV POLLUTION PREVENTION

### 4.1 PURPOSE AND SCOPE

- a. This section implements that portion of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs", as it relates to the prevention of pollution at KSC.
  - (1) It locates potential sources of pollution at KSC.
  - (2) It delineates organizational functions to be followed for the prevention, control, and abatement of air and water pollution.
- b. This section does not cover sewage and waste water treatment. These items are covered in Section V.

As outlined in KMI 8800.3, "KSC Prevention, Control, and Abatement of Air and Water Pollution", KSC will comply with all NASA instructions for the prevention, control, and abatement of air and water pollution and will coordinate plans for pollution controls with appropriate Federal, State, and county authorities.

### 4.2 POTENTIAL SOURCES OF POLLUTION

#### a. Sanitary Landfills

Two sanitary landfill areas were constructed at KSC. One is located off Schwartz Road and the other is on Ransom Road near the reclamation area. The Ransom Road landfill facility is inactive (closed in 1968). The Schwartz Road sanitary landfill is utilized in conformance with the requirements established in Chapter 10D-12, Rules, State of Florida, Department of Health and Rehabilitative Services, "Garbage and Rubbish". Topography at KSC is such that landfill cells lie very near the water table. Because of this and the varied nature of the solid materials buried in the landfills, the greatest pollution hazard is to the water. For sampling purposes, there are five well points at each landfill. Sampling at both landfills is conducted by the Environmental Sanitation section of the OMEHS Contractor on a quarterly basis. The subsurface water obtained thereby is analyzed at the Environmental Health Laboratory to determine bacterial and chemical content. Results are recorded on KSC Form 16-284, Water Chemistry Analysis (see Figure 4-1) and if significant, are submitted to the Roads and Grounds contractor for corrective action. If not significant, the report is filed for future reference.



b. Drainage Ditches and Canals

There are hundreds of miles of drainage ditches and canals at KSC. Nearly all are potential sources of pollution due to run-off from groves, roads, and work areas. The Environmental Health Sanitation section of the OMEHS Contractor collects water samples from 15 areas on a quarterly basis or more often if appropriate. The samples and analytical results are handled in the same manner as described in paragraph 4.2a; in all instances the standards are those established in Chapter 17-3, Rules, State of Florida, Department of Pollution Control, "Pollution of Waters".

c. Fuel and Oxidizer Drain Sumps

Fuel, as well as oxidizer drain sumps, are located at each of the two launch pads at KSC. There is also a fuel and an oxidizer drain sump at the Mobile Service Structure (MSS) Parksite. As used herein, fuel is UDMH, and oxidizer is  $N_2O_4$ . At the launch pads, sumps are sampled at least once weekly by Environmental Health personnel. Depending upon weather conditions, sumps may be sampled more frequently. The MSS Parksite sumps are sampled as needed or upon request. In all instances, Environmental Health analyzes sump concentrations of fuel or oxidizer in the run-off water prior to dumping. A "safe" concentration of UDMH is 0.5 ppm or less; "safe" conditions for dumping oxidizer sump water requires a pH reading of 6 or greater. If these "safe" standards are not met, the water is pumped out and removed by tanker truck to Cape Kennedy Air Force Station (CKAFS) for treatment and disposal. The fire training area at KSC contains a large drain pond that is essentially a fuel drain sump. As with the drain sumps at the MSS Parksite, this pond is sampled to assure "safe" concentrations of fuel prior to dumping. Sampling is done on an as-needed basis or upon request. In all respects, this water is treated the same as any other fuel drain sump water.

d. There are many areas at KSC where the work performed creates a potential for pollution if established controls fail. The number of such areas prevents a detailed coverage of controls established in each instance, but such coverage can be found in the reference cited for this chapter. A representative listing of such areas follows:

- (1) Wash racks
- (2) Steam cleaning operations
- (3) Precision cleaning
- (4) Corrosion control
- (5) Grease traps of all types
- (6) Painting areas
- (7) Photo development

- (8) Laboratories
- (9) Venting operations
- (10) Fire training

Environmental Health personnel check each of these areas at least twice yearly to assure continued compliance with acceptable pollution control measures.

#### 4.3 ORGANIZATIONAL FUNCTIONS

- a. The KSC Environmental Health Officer (IS-MED-A) assists in the prevention, control, and abatement of pollution at KSC by:
  - (1) Surveying operations for compliance with the requirements of NPD 8800.6A, "Policy on Environmental Quality and Control"; NMI 8800.3A, "Prevention, Control, and Abatement of Water Pollution"; and NMI 8800.4, "Prevention, Control, and Abatement of Air Pollution."
  - (2) Surveying operations for compliance with the requirements of Federal, State, and local authorities as those requirements pertain to pollution.
  - (3) Providing for the sampling and analysis of surface, sub-surface, and waste water to determine the existence of pollution therein.
  - (4) Investigating accidents and incidents capable of creating pollution at KSC.
  - (5) Making recommendations to proper authority for the control of pollution.
  - (6) Acting as a member of the KSC Pollution Control Working Group.
  - (7) Cooperating fully with the Pollution Control Officer in the performance of his duties.
  - (8) Monitoring work operations to assure proper pollution control measures are in effect.
  - (9) Furnishing consultative services for solutions to pollution problems.
- b. Supervisors, both civil service and contractor, at all levels will support prevention, control, and abatement of pollution at KSC by:
  - (1) Assuring that their work operations are in conformance with the directives referenced in this handbook.

- (2) Promptly reporting to the KSC Environmental Health Officer those accidents and incidents capable of producing pollution.
- (3) Cooperating fully with the KSC Pollution Control and Environmental Health Officers in the performance of their duties.

#### 4.4 REFERENCES

- a. KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"
- b. KMI 8800.3, "KSC Prevention, Control, and Abatement of Air and Water Pollution "
- c. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-12, "Garbage and Rubbish"
- d. Rules, State of Florida, Department of Pollution Control, Chapter 17-3, "Pollution of Waters"
- e. NPD 8800.6A, "Policy on Environmental Quality and Control"
- f. NMI 8800.3A, "Prevention, Control and Abatement of Water Pollution"
- g. NMI 8800.4, "Prevention, Control and Abatement of Air Pollution"

## SECTION V SEWAGE AND WASTE WATER SANITATION

### 5.1 PURPOSE AND SCOPE

- a. This section implements that portion of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs," as it pertains to sewage and waste water sanitation.
- b. The purpose of this section is to assure that sewage and waste water will be treated in a manner that complies with Federal, State, and local standards while offering the least possible harm to the ecology of KSC.

### 5.2 GENERAL

- a. Sewage treatment plants (STP) serve all major industrial areas at KSC. Chemical toilets are used at transient work locations for treatment of human wastes and a septic tank is provided at a remote site with small and infrequent usage. The location of existing sewage treatment plants, type of treatment, and design capacity are listed in Figure 5-1 and Table 5-1.
- b. Federal and State criteria require that all STP effluents released to receiving streams meet rigid standards. The basic criteria requires STPs to average 90 percent removal of bio-chemical oxygen demand (BOD) and suspended solids. In addition, industrial wastes processed through the STP must not cause harmful levels of heavy metals, organic and inorganic chemicals, or bacterial contamination in the ground water receiving streams.
- c. The sewage treatment plants at KSC are operated and maintained in accordance with KSC GP-993, "Performance Specifications for Operation and Maintenance of Waste Water Treatment Plants." To determine plant efficiencies and quality of STP effluents, prescribed chemical and physical tests are performed at intervals designed to provide statistically significant data. The frequency of sampling tests is determined by plant capacity and average daily flow. This data is also used by Environmental Health engineers to determine necessity for equipment or design modifications to improve plant operations. Daily operations for each plant are recorded by STP operators, and Plant Monthly Operations Report(s) are forwarded to the Brevard County Health Department. Environmental Health provides surveillance over STP operations and will perform additional testing as needed to evaluate compliance with environmental standards and identify potential pollutants of receiving streams.

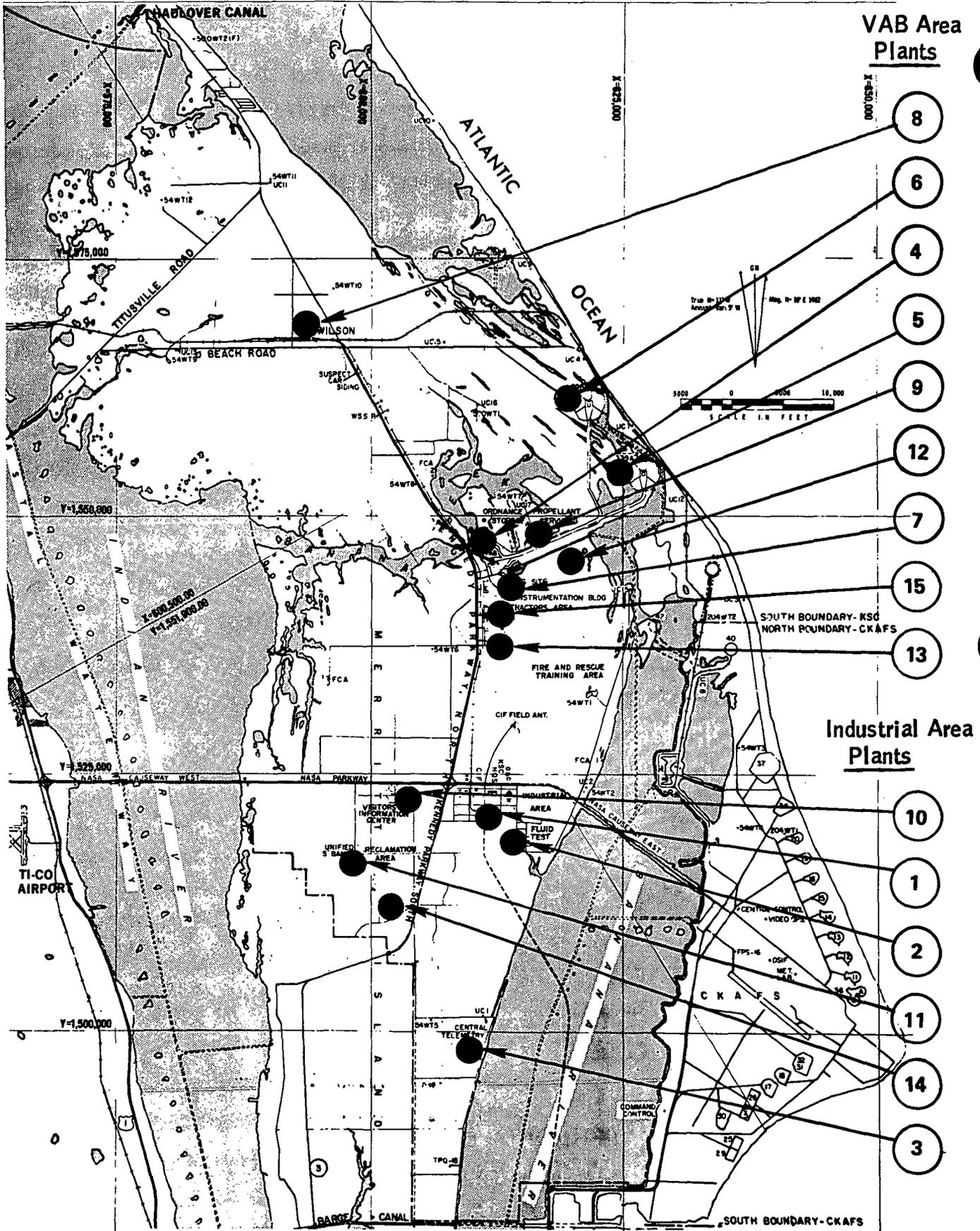


Figure 5-1. Vicinity Map of Waste Water Treatment Plants at KSC

Table 5-1. Description of Sewage Treatment Plants

<u>No.</u>	<u>Location</u>	<u>Type</u>	<u>Capacity</u>	<u>Average Flow</u>
1	M6-895B	Extended Aeration	370 000 GPD	149 000 GPD
2	M7-1162	Extended Aeration	7 000 GPD	3 800 GPD
3	N6-2296a	Extended Aeration	10 000 GPD	4 700 GPD
4	K6-792	Extended Aeration	108 000 GPD	58 000 GPD
5	J8-1705	Contact Stabilization	50 000 GPD	41 900 GPD
6	J7-384	Contact Stabilization	50 000 GPD	7 300 GPD
7	K7-1205d	Extended Aeration	10 000 GPD	4 000 GPD
8	H5-1634	Extended Aeration	3 300 GPD	1 000 GPD
9	K7-464	Extended Aeration	14 000 GPD	1 200 GPD
10	M6-409	Extended Aeration or Contact Stabilization	100 000 GPD	15 000 GPD
11	M5-1494	Extended Aeration	15 000 GPD	3 000 GPD
12	K7-620	Extended Aeration	11 000 GPD	8 000 GPD
13	K6-2196a	Mechanical Aeration	1 000 GPD	Not Metered
14	M6-1671a	Extended Aeration	5 000 GPD	2 000 GPD
15	K6-1996	Extended Aeration	8 000 GPD	1 000 GPD

### 5.3 ORGANIZATIONAL FUNCTIONS

a. The KSC Environmental Health Officer (IS-MED-A) will:

- (1) Provide routine surveillance of the sanitation aspects of STP operations at KSC.
- (2) Assure action to sample and analyze STP effluents to assure compliance with Rules, State of Florida, Department of Air and Water Pollution Control, Chapter 17-3, "Pollution of Waters."
- (3) Provide for the inspection of all in-place chemical toilets at least monthly to assure compliance with Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-6, "Standards for Individual Sewage Disposal Facilities."
- (4) Review STP designs or design modifications. Make recommendations to assure engineering features are in compliance with existing statutes.
- (5) Assure action to sample and analyze surface waters at KSC to assure all waters at all places and at all times shall be free from:
  - (a) Settleable substances attributable to industrial discharges that form putrescent or otherwise objectionable sludge deposits.

- (b) Floating substances such as debris, oil, scum, etc., attributable to industrial discharge in amounts sufficient to be unsightly or deleterious.
  - (c) Deleterious substances attributable to industrial discharge that produce color, odor, or other conditions in such a degree as to create a nuisance.
  - (d) Toxic substances attributable to industrial discharge in concentrations or combinations which are toxic or harmful to humans, animal, plant, or aquatic life.
- (6) Coordinate activities with the BIO-Sciences Staff (IS-B) to assure that STP effluent and waste waters at KSC are in substantial conformance with this and other pertinent directives.

#### 5.4 REFERENCES

- a. KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"
- b. Rules, State of Florida, Department of Air and Water Pollution Control, Chapter 17-3, "Pollution of Waters"
- c. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-6, "Standards for Individual Sewage Disposal Facilities"
- d. KSC GP-993, "Performance Specifications for Operation and Maintenance of Waste Water Treatment Plants"

SECTION VI  
ANIMAL AND PEST CONTROL

6.1 PURPOSE AND SCOPE

- a. This section implements that portion of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Program," as it pertains to the control of animals and pests at KSC.
- b. It is the purpose of this section to assure that both man and wildlife at KSC are protected from harm while pests are controlled to the greatest extent possible through the use of preventive pest control measures. Pesticides, when used, will be limited to those offering the least possible harm to man, wildlife, and the environment.
- c. The contents of this section include:
  - (1) Controls established for the use of pesticides at KSC.
  - (2) Functions performed by various organizations at KSC to assure the least possible harm to the environment when pesticides are used.
  - (3) The role of the OMEHS Contractor in the control of animals and pests at KSC.
  - (4) A listing of pesticides to be used at KSC.

6.2 GENERAL

- a. The Bureau of Sport Fisheries and Wildlife, a branch of the U.S. Department of Interior, has primary responsibility for the conservation of fish and wildlife at KSC. The Bureau controls fishing and hunting at KSC. The Bureau also traps wildlife straying into the industrial area, removing them to remote and safer areas in the 140,000 acres under their jurisdiction. The Bureau cooperates fully with other KSC organizations in the control of wildlife and pests; NMI 1052.91A, "NASA Bureau of Sport Fisheries and Wildlife Agreement - Use of Property at KSC."
- b. Brevard County has an established mosquito control district that encompasses KSC. District personnel conduct aerial as well as surface larvicide spraying operations for the control of mosquitos in the larval stage. Mosquito control district operations at KSC do not include fogging operations for the control of mature mosquitos.

- c. The Brevard County Health Department acts as a Rabies Control Center and furnishes rabies verifications of suspected animals trapped or destroyed at KSC.
- d. The KSC Working Group, Pesticides (KSC-WGP) is established under the auspices of the NASA-WGP which, in turn, reports to the Working Group on Pesticides, President's Cabinet Committee on the Environment. The KSC-WGP determines the type, formulation, and method of application of all pesticides to be used at KSC. The KSC-WGP submits, at least annually, its proposed and current pest control program. Such programs are reviewed from the standpoint of safety to humans, domestic animals and crops, fish and wildlife, and to other elements of the environment.

### 6.3 ORGANIZATIONAL FUNCTIONS

- a. The KSC Environmental Health Officer (IS-MED-A) assures that the OMEHS Contractor:
  - (1) Maintains a continuing surveillance of other contractor animal and pest control activities.
  - (2) Inspects foods, food preparation, and food dispensing areas to assure compliance with preventive pest control measures as outlined in Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-13, "Food Service."
  - (3) Reviews building plans with specific attention to features designed to prevent pest infestation. Follows guidelines established in U.S. Department of Health, Education, and Welfare, Public Health Service Publications No. 546, "The Vending of Food and Beverages", and No. 934, "Food Service Sanitation Manual."
  - (4) Investigates reported incidents of pest infestations in any area and makes recommendations for corrective action.
  - (5) Re-inspects areas treated for pests to evaluate the effectiveness of action taken.
  - (6) Serves as a member of the KSC-WGP; makes recommendations regarding selection and safe use of pesticides.
  - (7) Presents training in respiratory protection as outlined in SP 3410.1/AD, Systems Training Course Catalog, OP-305-KSC, "Respirators, Selection, Use and Care."

- (8) Determines specific respiratory protection required during handling and application of pesticides.
- b. Plant Engineering and Maintenance Division, Heavy Equipment and Roads and Grounds Section (IS-PEM-43), assures that the Heavy Equipment and Roads and Grounds Contractor:
- (1) Controls animal and insect pests at KSC by utilizing the type, formulation and application of pesticides approved by the KSC-WGP.
  - (2) Maintains an adequate inventory of approved pesticides.
  - (3) Requires employees to wear protective clothing while mixing or applying hazardous pesticides and during equipment cleaning following such use.
  - (4) Utilizes respiratory protection approved by KSC Environmental Health in accordance with instructions contained in KHB 1840.1/IS, "Industrial Hygiene Handbook" Section II.
  - (5) Maintains records of personnel handling or applying pesticides to include:
    - (a) Training received
    - (b) Date of physical examination
    - (c) Accumulated exposure times
- c. The Medical Services Office (IS-MED) assures that the OMEHS Contractor:
- (1) Furnishes medical surveillance of the health aspects of animal and insect control activities at KSC.
  - (2) Furnishes pre-employment and annual physicals for those personnel handling or applying pesticides.
  - (3) Performs blood serum analysis each 6 months for those personnel handling or applying pesticides.
- d. Other KSC organizational elements will support animal and pest control through preventive measures to include:
- (1) Proper design of facilities to preclude pest entry.
  - (2) Proper storage or disposal of materials attractive to animals and pests.

- (3) Proper housekeeping procedures in areas storing, preparing, serving, or dispensing foods as outlined in Section II.
- (4) Prompt reporting of known or suspected infestations to the OMEHS Contractor.

6.4 PESTS AND PESTICIDES

- a. The following is a listing of pesticides approved for use at KSC. The list was extracted from the "Program Report" 1972, submitted by the KSC-WGP.

Formulation and application of these pesticides will be as directed by the KSC-WGP.

<u>PEST</u>	<u>INSECTICIDE</u>
Ants	Chlordane
Fire ants	Mirex
Aphids	Sevin
Roaches, Chinch Bugs	Baygon
Flies	Pyrethrin
Mole Crickets	Kepone
Roaches	Diazinon
Rodents	Warfarin
Mosquitos	Malathion, Dibrom, Baytex

- b. A current listing of insecticides, grouped by generic characteristics and registered with the Environmental Protection Agency, Pesticides Regulation Division, is found in Appendix A. The listing is restricted to those insecticides registered for use in areas storing, processing, preparing, serving, or vending food.

6.5 REFERENCES

- a. KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"
- b. NMI 1052.91A, "NASA-Bureau of Sport Fisheries and Wildlife Agreement - Use of Property at KSC"
- c. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-13, "Food Service"

- d. U. S. Department of Health, Education, and Welfare, Public Health Service Publication No. 546, "The Vending of Food and Beverages"
- e. U. S. Department of Health, Education and Welfare, Public Health Service Publication No. 934, "Food Service Sanitation Manual"
- f. SP 3410.1/AD, Systems Training Course Catalog, OP-305-KSC, "Respirators, Selection, Use and Care"
- g. KHB 1840.1/IS, "Industrial Hygiene Handbook" Section II
- h. KSC-WGP, "Program Report" 1972

## SECTION VII FACILITIES SANITATION

### 7.1 PURPOSE AND SCOPE

- a. This section implements that portion of KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs", as it relates to the facilities sanitation role of Environmental Health.
- b. The purpose of this section is to assure that all facilities are maintained in conformance with sanitary standards established by Federal, State, and local authorities.
- c. The contents are restricted to a brief resume of the Installation Support Services' role in facility sanitation and a broad overview of the Environmental Health's surveillance of these procedures.

### 7.2 GENERAL

- a. Environmental Health personnel conduct "walk-through" surveys to all facilities at KSC at least twice each year. The purpose of the "walk-through" is to identify, evaluate, and control health hazards or stressful situations in the work area. Sanitation hazards, when noted, are submitted to the Environmental Health Sanitation section of the OMEHS Contractor for investigation, evaluation, and recommendations for corrective action. Items of concern at any facility or work area would include:
  - (1) Housekeeping (cleanliness)
  - (2) Waste disposal practices
  - (3) Rodent, insect and vermin control
  - (4) Potable water supplies
  - (5) Toilet facilities
  - (6) Washing facilities
- b. Environmental Health personnel also inspect the KARS Recreation Area. Inspection procedures largely follow the guidelines established in Chapter 10D-5, Rules, State of Florida, Department of Health and Rehabilitative Services, "Swimming Pools and Bathing Places".
- c. The Installation Support Services (ISS) contractor provides custodial services at KSC. As a result, each of the sanitation items listed in paragraph 7.2a involves some portion of the ISS contract. This contractor also performs custodial services for the KARS Recreation Area.

Housekeeping services at KSC are performed by a small business sub-contractor. These housekeeping services are performed for the various organizations at KSC in accordance with the terms of their contract with NASA. A discussion of the services furnished to any one organization at KSC is beyond the scope of this handbook.

### 7.3 ORGANIZATIONAL FUNCTIONS

- a. The KSC Environmental Health Officer (IS-MED-A):
  - (1) Maintains a continuing surveillance program of all facilities at KSC to assure compliance with paragraph 1910.141, Code of Federal Regulations, Title 29, "Labor", as it pertains to facilities sanitation.
  - (2) Inspects the KARS Recreation Area to assure compliance with Chapter 10D-5, Rules, State of Florida, Department of Health and Rehabilitative Services, "Swimming Pools and Bathing Places."
  - (3) Investigates facility sanitation complaints and makes recommendations for corrective action if necessary.
- b. The Installation Support Services contractor maintains facilities and work areas in an acceptable sanitary condition:
  - (1) By following good housekeeping procedures:
    - (a) Clean work area
    - (b) Dust minimized
    - (c) Cleaning after duty hours, if feasible
  - (2) By establishing sanitary conditions for waste disposal, to include:
    - (a) Leakproof receptacles
    - (b) Easily cleaned receptacles
    - (c) Closely fitted receptacle covers
    - (d) Frequent emptying and cleaning
  - (3) By control of insects, rodents, and vermin, as outlined in Section VI and in other applicable directives.
  - (4) By furnishing a healthful, potable water supply to include:
    - (a) Fountains that comply with the requirements of ANSI Z4.2-1942, "Specifications for Drinking Fountains."

- (b) Potable water within 200 feet of the work area.
  - (c) No open containers for water.
- (5) By assuring that toilet facilities are adequate. (See Chapter 10D-10, Rules, State of Florida, Department of Health and Rehabilitative Services, "Sanitary Facilities for Buildings Serving the Public and Places of Employment.")
- (6) By furnishing adequate wash-up facilities to include:
- (a) Lavatory or sink
  - (b) Soap
  - (c) Individual towels

#### 7.4 REFERENCES

- a. KMI 1810.1C/IS, "KSC Occupational Medicine and Environmental Health Programs"
- b. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-5, "Swimming Pools and Bathing Places"
- c. Code of Federal Regulations, Title 29, "Labor", paragraph 1910.141
- d. American National Standards Institute Publication, ANSI Z4.2-1942, "Specifications for Drinking Fountains"
- e. Rules, State of Florida, Department of Health and Rehabilitative Services, Chapter 10D-10, "Sanitary Facilities for Buildings Serving the Public and Places of Employment"

APPENDIX A  
INSECTICIDES REGISTERED WITH THE  
ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL PROTECTION AGENCY

PESTICIDES OFFICE

WASHINGTON, D.C. 20250

PESTICIDES REGULATION DIVISION

RESIDUAL, NON-RESIDUAL AND BAIT-TYPE INSECTICIDES CURRENTLY REGISTERED FOR USE IN FOOD PROCESSING PLANTS, RESTAURANTS OR OTHER AREAS WHERE FOOD IS COMMERCIALY PREPARED OR PROCESSED

Group I:

Residual type insecticides which are currently registered for use as residual insecticides in the inedible product areas of food processing plants and in restaurants or other places where food is not commercially prepared, processed, or served:

Baygon	Dipterex	methoxychlor
carbaryl	dursban	naled
chlordane	fenthion	Perthane
Diazinon	heptachlor	ronnel
dicapthon	lindane	rotenone
dichlorvos (DDVP)	Malathion	Strobane
dimethoate		toxaphene

Products registered for this use must bear the following precautionary labeling: "Do not use in the edible products area of food processing plants, restaurants or other areas where food is commercially prepared or processed. Do not use in serving areas while food is exposed."

Group II:

Residual-type insecticides which are also registered for use as space sprays only, in the edible product areas of food processing plants, restaurants, or other areas where food is commercially prepared or processed:

dichlorvos (DDVP)	naled
Malathion	Ronnel
methoxychlor	

Products registered for this use must bear the following precautionary labeling: "Food should be removed or covered during treatment. All food processing surfaces should be covered during treatment or thoroughly cleaned before using. When using the product in these areas, apply only when the facility is not in operation."

If any products of this type are to be applied in such a manner as to leave a residual deposit, they automatically fall under Group I and are subject to that precautionary labeling.

**Group III:**

Non-residual type insecticides and synergists which are currently registered for use as space and contact treatments in the edible products areas of food processing plants, restaurants or other areas where food is prepared or processed:

allethrin	pyrethrin
d-trans allethrin	rotenone
Lethane 384	SBP-1382
MGK-264	Thanite
piperonyl butoxide	Tropital

Products registered for these uses must bear the following precautionary labeling: "Foods should be removed or covered during treatment. All food processing surfaces should be covered during treatment or thoroughly cleaned before using. When using the product in these areas, apply only when the facility is not in operation."

**Group IV:**

Non-residual type insecticides and synergists which are currently registered for use in automatic activation devices in the edible product areas of food processing plants, restaurants or other areas where food is prepared or processed:

d-trans allethrin	pyrethrin
MGK-264	Stabilene
piperonyl butoxide	Tropital

Products registered for this use must bear the following precautionary labeling: "Foods should be removed or covered during treatment. All food processing surfaces should be covered during treatment or thoroughly cleaned before using. When using the product in these areas, apply only when the facility is not in operation."

Currently registered products of this type are awaiting a final decision from the Environmental Protection Agency.

**Group V:**

Bait-type products prepared and applied in separate containers which are permitted with directions for use in exposed food areas during periods when operations are shut down and all food and food handling surfaces are removed or well protected. Cleaning procedures are required before operations are resumed. All bait containers should be removed and accounted for at this time.

Baygon  
Kepone

Products registered for this use must bear the following precautionary labeling: "Use only when the facility is not in operation and food is not exposed. Use only in bait boxes where bait in each box can be accounted for. Remove and account for all bait boxes prior to resuming food processing."

**Group VI:**

Vaporizing type insecticides which are currently registered for use in the inedible product areas of food processing plants, restaurants, or other areas where food is prepared or processed:

allethrin (vaporizers)

Products registered for this use must bear the following precautionary labeling: "Do not use in kitchens, restaurants or areas where food is prepared or served," or "Do not use in the edible products areas of food processing plants, restaurants, or other areas where food is prepared or processed."

**Group VII:**

Dry, powdered type products such as silica aerosol gels, boric acid, pyrethrum, borax, and other powders may be used in the inedible product areas of food processing plants, restaurants, or other areas where food is commercially prepared or processed.

Products registered for this use must bear the following precautionary labeling: "Do not use in the edible product areas of food processing plants, restaurants, or other areas where food is commercially prepared or processed. Do not use in serving areas while food is exposed."

**Group VIII:**

An additional specialized usage includes concentrations of sodium fluoride (40% or less) which are restricted to areas which are inaccessible to children and pets. Any powder visible after application is completed should be carefully brushed into cracks and crevices or else removed.

Products registered for this use must bear the following precautionary labeling: "Do not use in the edible product areas of food processing plants, restaurants, or other areas where food is commercially prepared or processed. Do not use in serving areas while food is exposed."

No attempt has been made to cover all powders, specific products, or unusual formulations or mixtures of pesticides.

This information is subject to periodical revision and updating as a result of the addition of new or cancellation of old insecticide products, or the issuance of food additive tolerance regulations which could relax the present precautionary statements governing the use of these materials in food-handling establishments.

APPENDIX B

GLOSSARY

Aeration	Oxygenation through exposure to air.
Deleterious	Injurious.
Detergent	Any cleansing agent, or solvent, as water or soap. Technically sometimes limited to synthetic agents other than soaps.
Fumigants	Volatile chemicals that kill by entering an organism through the respiratory system. i.e., methyl bromide, hydrogen cyanide, paradichlobenzene (PDB), etc.
Fumigation	The use of gaseous poisons (fumigants) to kill insects, rodents, and other pests. These gases must be used with care since they are not specifically for insects, but are equally or more toxic to humans.
Fungicide	A substance or mixture of substances that may be used to destroy or otherwise control fungi, particularly those causing diseases of plants or deterioration of wood.
Infectious	Capable of communicating disease.
Insecticide	A substance or mixture of substances that may be used to destroy or otherwise control insects and their near relatives. Insecticides of more specific use are often designated by such terms as larvacide, aphicide, or miticide, which kill larvae, aphids, and mites respectively.
Pathogenic	Producing disease.
Pesticide	A substance or mixture of substances that may be used to destroy or otherwise control any unwanted form of plant or animal life.
pH	A number that exactly describes the degree of acidity or basicity of a solution. It is commonly considered to be the negative logarithm (to the base 10) of the hydrogen ion concentration of a solution.
Potable	Fit for drinking.
Putrescent	Rotting.

Rodenticide

A substance or mixture of substances that may be used to destroy or otherwise control rodents and related animal pests.

Utensils

Any eating or drinking tableware; kitchenware such as pots, pans, ladles and food containers; or other implements used in the preparation, storage or serving of food.

Vending machine

Any self-service device which, upon insertion of coin or token, or by other means, dispenses unit servings of food or beverage, either in bulk or in package, without the necessity of replenishing the device between each operation.